APPENDIX R-2

MONITORING AND METHODOLOGY SECTION

Resource	Suggested Monitoring and Methodology
Air Quality	Monitoring of air quality and other conditions conducted by the Utah Division of Air Quality, in coordination with Utah DEQ, will be used to determine whether BLM actions that may contribute to air quality concerns (mainly prescribed fire or slash burning) may proceed or be deferred until conditions improve. In addition, as part of the Interagency Monitoring of Protected Visual Environments (IMPROVE) network, visual air quality in Bryce Canyon National Park and Canyonlands National Park monitor visibility. These monitoring data will be reviewed, as appropriate. The number of BLM actions contributing to any violation of national air quality standards will be tracked annually if available (expected to generally be none given BLM's).
Soil Resources	A sample of all projects with the potential to affect soil resources will be evaluated on a periodic basis to determine if best management practices or identified mitigation measures were followed and if they were effective. Results will be reported in the Annual Program Summary and Planning Update. The number of allotments/acres that met the Upland and Riparian standards in the Utah Standards for Rangeland Health and the total number of allotments/acres assessed will also be reported in the Annual Program Summary and Planning Update.
Water Resources	The BLM will work with the State Division of Water Quality to monitor water quality. Review the water quality data from instream monitoring stations annually. In addition, use the rangeland health assessment process, particularly Standard 4 according to Interpreting Indicators of Rangeland Health, Rangeland Health Standards and Guidelines, and BLM Manual 4180 and Handbook H-4180-1. Water quality monitoring would be conducted at the established water quality sampling stations on a priority basis using indicators that are chosen in coordination with the State Division of Water Quality, These indicators are temperature, nutrients, turbidity, sediment, dissolved oxygen, and stream channel condition. The protocol is outlined in the USDI - BLM National Field Manual for the Collection of Water Quality Data.

Resource	Suggested Monitoring and Methodology
	Implement and monitor effectiveness of BMPs to protect the quality and beneficial uses of water at the project level. BMPs will be monitored and evaluated on implementation and effectiveness as part of the project or activity plan.
Vegetation	Measure trends in vegetative production, structure, and composition, soil/site stability, watershed function, and integrity of biotic community. Use the rangeland health assessment process prescribed in the most current approved versions of Interpreting Indicators of Rangeland Health, Rangeland Health Standards and Guidelines, and BLM Manual 4180 and Handbook H-4180-1 guiding implementation of the rangeland health standards. Determine level of PFC using the Rangeland Health Assessments. Conduct periodic measurements of plant composition, vigor, and productivity, as well as the amount and distribution of plant cover and litter. Monitoring of existing condition of vegetation would consist of identifying ecological sites, determining ecological status, determining soil types, vegetation mapping, baseline inventory, and assembling existing basic information.
	Monitor for seedling establishment, seedling and sapling survival, and understory herbaceous plant diversity. Monitor for effectiveness of treatments in rare plant communities that receive restoration treatments or conifer removal. Effective monitoring methods should be used (e.g., Sampling Vegetation Attributes Technical Reference TR-1734-4, or Herrick, J.E., et al, 2005, Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems).
	Monitor riparian condition and functional status. Conduct Proper Functioning Condition (PFC) Assessment per TR 1737-9 and TR 1737-15 (assessment for streams) and TR 1737-11 and TR 1737-16 (assessments for lakes/wetlands) to assess the functionality of riparian and wetland areas. Concurrent with assessment of PFC, determine existing or potential natural community for all riparian and wetland sites, according to guidelines specified in Riparian Area Management, Greenline-Riparian-Wetland Monitoring, Technical Reference 1737-8, (1993.) An ecological site inventory would also be conducted for riparian-wetland sites as specified in Riparian Area Management, Procedures for Ecological Site Inventory—with Special Reference to Riparian-Wetland Sites, (Steve Leonard, et al; BLM Technical Reference 1737¬7, 1992.) Measure the amount and distribution of plants across a channel cross-section using riparian transects; document visual changes over time on the condition of the stream corridor using photo

Resource	Suggested Monitoring and Methodology
	points.
	Conduct annual monitoring for new noxious weeds, concentrating in areas where ground disturbing activities have occurred, and where the public or agency personnel have reported sightings. Visit known noxious weed sites that are identified for treatment, and evaluate for effectiveness of control (annually). Monitor for both invasiveness and impacts. Monitor for new satellite populations of noxious weeds beyond existing noxious weed infestations/populations. Visit known sites not identified for treatment on a rotational basis over three years. For all known sites and any newly discovered sites, locate with a global positioning system (GPS) unit, photograph, measure, and determine the need for future treatment. Survey all burned areas (natural and prescribed) over 20 acres for noxious weeds for three years following the burn.
Special Status Species (Threatened, Endangered, and Sensitive)	Monitoring for listed and non-listed special status species and their habitats would be developed where land use and human disturbances have been identified as having potential for adverse impacts. In accordance with conservation measures, agreements, and consultation efforts with the USFWS, monitor listed species regularly. Long-term monitoring would be conducted using methods chosen in coordination with the USFWS and Utah Division of Wildlife Resources. Visual reconnaissance would be used to obtain general information on the habitats of special status plants. Individual federally listed species populations and habitats would be monitored annually or bi-annually.
	Monitor stream habitat to detect changes every 5 to 10 years in streams with historic or currently occupied roundtail chub, bluehead sucker, and flannelmouth sucker habitat, in cooperation with UDWR.
Fish and Wildlife	In conjunction with other federal, state, or private agencies, continue to monitor wildlife populations in the planning area. Do this for individual species such as mule deer, elk, and pronghorn; and groups of species associated with source habitats such as sagebrush-steppe, juniper, and mixed conifer forest. Periodically determine the adequacy of existing data (i.e. species, habitats, etc.) for supporting management decisions. Periodically assess the effectiveness of a sampling of different vegetation treatments and disturbance actions to determine effectiveness of

Resource	Suggested Monitoring and Methodology
	management decisions.
Wildland Fire Ecology	Monitoring will determine whether fire management strategies, practices, and activities are meeting resource management objectives and concerns. Fire management plans and policies will be updated as needed to keep current with national and state fire management direction. Scheduled program reviews (post-season fire review) will be conducted to evaluate fire management effectiveness in meeting goals and to re-assess program direction. Pre-fire condition and post-fire effects will be determined by monitoring vegetative response to treatments and progress towards meeting objectives. Monitoring methods may include fuels and vegetation transects, photo points, density, cover and frequency plots, and ocular estimates. As available, applicable remote sensing data will also be incorporated into ecological condition monitoring. The number of acres in Condition Class 1, 2, and 3 will be re-evaluated during the watershed assessment process, and tracked and reported in the Annual Program Summary and Planning Update. Wildfire rehabilitation effectiveness monitoring studies will be encouraged to determine whether emergency rehabilitation objectives are met. Monitoring requirements and methods will be project specific.
Cultural Resources	Establish a comprehensive monitoring program emphasizing: • Cultural sites that have been previously identified as being impacted (e.g., from vandalism, erosion, grazing, or other) • Cultural sites identified on maps, brochures, or other media that bring the site into public awareness • Sites that are known to be popular for public visitation (e.g., public use site) • A representative sample of sites known to be prone to impacts from predictable sources (e.g., vandalism, recreation, grazing, or development). As noted in CUL-7, areas for new field inventories would be prioritized as follows: • Areas of special cultural designation (e.g., ACECs, RNAs, NHLs, and National Register sites) that have not been fully inventoried • Resources eligible for the NRHP at a national level of significance that have not been fully inventoried • Cultural resources sites identified for public use

Resource	Suggested Monitoring and Methodology
	• Five-mile vulnerability zones surrounding cities and towns and 400 feet from the centerline on designated OHV trails. A representative sample of significant cultural sites will be monitored at least once every three years (1-3 years), and a mitigation plan based on the results of the monitoring will be developed if necessary. Periodic ground patrols will be used year-round to reduce or prevent pot-hunting. Major sites will be periodically inspected to document any damage and identify future stabilization needs. Management plans will be developed for significant properties requiring protection or stabilization when identified. Assistance to institutions doing research or collection of specimens will be encouraged. Monitoring and recording of specimen locations will continue. Cultural resources will continue to be inventoried and evaluated as part of project level planning to achieve the objective of protecting significant properties from impact by proposed federally funded or authorized actions. This inventory and evaluation includes application of the National Register criteria to cultural properties and consultation with the State Historic Preservation Officer (SHPO), Tribal Governments, and Advisory Council on Historic Preservation, as appropriate per current regulations, policy, and the UT-BLM-SHPO Protocol Agreement.
Paleontological Resources	Monitor the highest priority scientifically significant paleontological sites for trend and condition. Conduct non-Section 106 proactive inventories intermittently as resources allow. Prioritize paleontological resource inventories in the following areas: • High resource potential • Medium resource potential • Low resource potential. Monitor high-significance (scientific or interpretive) sites with fossil resources that are not feasible or desirable to excavate or collect when possible to document their condition. Frequency of monitoring action for identified sites would be determined by the physical nature of the resource and potential threats. The number of localities visited on an annual basis and their condition will be reported in the Annual Program Summary and Planning Update.
Visual Resources	Any project design features or mitigation measures identified to address visual resource management concerns will be monitored

Resource	Suggested Monitoring and Methodology
	to ensure compliance with established VRM classes. Where appropriate, monitoring will include the use of the visual contrast rating system, described in BLM Manual 8400 during project review and upon project completion to assess the effectiveness of project design features and any mitigating measures. The number of areas/projects monitored for compliance with VRM objectives will be reported in the Annual Program Summary and Planning Update.
Non-WSA Lands with Wilderness Characteristics	Monitor impacts to the five wilderness characteristics areas, focusing on those areas with a higher potential for impacts. Monitor impacts from OHV use annually. On a project-by-project basis, monitor impacts to wilderness characteristics. Assess impacts to naturalness and solitude (e.g., actual counts of visitors, OHV tracks, dispersed camping impacts or foot prints). The reports of surveillance visits and any impacts to wilderness condition (acres of surface disturbance, OHV use off designated roads, etc…) will be kept on file in the office and findings reported in the Annual Program Summary and Planning Update.
Drought and Natural Disasters	During periods of prolonged drought or in areas that have experienced natural disasters, increase monitoring noted under the other resources, uses, and special designations to ensure that RMP goals and objectives are met during these periods of increased vulnerability.
Forestry and Woodland Products	Record accomplishments for providing wood products in the Timber Sale Information System database and MIS reporting.
Livestock Grazing	Use the rangeland health assessment process prescribed in the most current approved versions of Interpreting Indicators of Rangeland Health, Rangeland Health Standards and Guidelines, and BLM Manual 4180 and Handbook H-4180-1 guiding implementation of the rangeland health standards. The number of allotments/acres that meet the Standards for Rangeland Health and the total number of allotments/acres assessed will be reported in the Annual Program Summary and Planning Update.
	Assess Rangeland Health (qualitative) with an interdisciplinary team every 10 years or at the time of permit renewal. Report acres moving toward or away from meeting standards as part of meeting RMP objectives. Photo points: Taken at repeatable locations showing changes over time.
Recreation	Monitoring of recreation resources will be directed primarily

Resource	Suggested Monitoring and Methodology
	toward SRMA's. Objective of monitoring will be to ensure continuity of recreation experience and opportunity and the healthy ecosystems, cultural resources and landscapes upon which the experience is based. Conduct periodic patrols of popular undeveloped use areas where recreation use is concentrated. Include patrols to check boundaries, signing, and visitor use; ensure visitor compliance with rules and regulations; evaluate user conflict; establish baseline data and observation points to determine current impacts from recreational use; and develop studies to help determine appropriate levels and patterns of recreational use and the influences of other resource uses. Focus field monitoring on visitation levels, compliance with rules, regulations, and permit stipulations for specific sites, dispersed uses, and prescribed standards and guidelines. Permits issued to commercial services will be monitored for compliance of permit stipulations and post-use requirements. Use visitor surveys, traffic counters, surveillance at developed recreation sites, documentation of user conflicts, and photo documentation of the changes in resource conditions over time. Monitoring may also include collection of data from visitor comments and complaints, or information request calls or emails. Use monitoring data to manage visitor use, develop plans and projects to reduce visitor impacts, and to provide appropriate facility or transportation system design.
OHV	Travel management and OHV use monitoring within the planning area will focus on compliance with specific route and area designations and restrictions, with primary emphasis on those routes or areas causing the highest levels of user conflicts or adverse impacts to resources. Various methods of monitoring may be employed including; aerial monitoring, ground patrol, "citizen watch," and appropriate methods of remote surveillance such as traffic counters, etc. Evaluate trail impacts on natural resources through visual inspections, photo at problem areas (erosion, users short cutting, etc). Use trail traffic counters where appropriate to determine visitor use levels. Involve volunteers to assist in trail monitoring where appropriate and feasible. Periodically check that routes meet the objectives set forth in the RMP to ensure resource conditions such as water quality, wildlife/fish habitat, or recreational values are maintained and available to communities and users, and ensure resource values are not compromised. Route or area closures will be regularly monitored for compliance. Cooperation with other agencies in travel

Resource	Suggested Monitoring and Methodology
	management and OHV use monitoring will continue to be emphasized, and improved wherever possible.
Transportation	Periodically check that roads meet the objectives set forth in the RMP to ensure resource conditions are maintained and available to communities and users, and ensure resource values are not compromised. Update the Transportation Plan as monitoring needs are found.
Lands and Realty	Land use authorizations will be monitored through periodic field examinations to ensure compliance with the terms and conditions of the authorizing document. On-the-ground monitoring will occur after issuance of the authorization and periodically throughout the life of the authorization as required by current policy, regulation or law. Records as to the status of the authorizations are tracked through the current BLM tracking system. Management and realty personnel will periodically review status of authorizations and compliance. The number of use authorizations monitored annually and the number of those in compliance with terms and conditions of the authorization in any given fiscal year will be recorded in the Annual Program Summary and reported in the current BLM tracking system. Land ownership adjustment actions will be monitored through the current BLM tracking system. Changes in land ownership affecting BLM lands or interests in lands will be recorded on the current BLM plats, maps and databases. The number of acres acquired and/or disposed of through land exchanges, acquisitions, sales, and Recreation and Public Purpose Act patents will be reported in the current BLM tracking system. Periodic on-the-ground inspections and discussions of the corridors and use areas will be conducted to ensure they are being managed correctly and that conflicting uses are not occurring which could preclude the use of these locations for their intended purpose. Any new mineral withdrawals from operation of the public land laws and/or mineral laws will be reported in the current BLM tracking system and Planning Update, as will any withdrawal revocations.
Minerals and Energy	Monitoring for leasable minerals will be done to ensure compliance with applicable laws, regulations, conditions of leases, and the requirements of approved exploration/development plans/applications for permit to drill. Monitoring activities will include:

Resource	Suggested Monitoring and Methodology
	1. Periodic field inspections of leasable mineral activities. Inspections will be conducted to determine compliance with applicable laws, regulations, lease stipulations, and the requirements of approved exploration and development plans, applications for permit to drill, and sundry notices. 2. Monitoring of oil and gas drilling/production activities in the planning area. Total gross surface disturbance and net surface disturbance from drilling will be tracked on a case by case basis. Monitoring of mining operations will be done to ensure compliance with 43 CFR 3809, 3802 and 3715 and other regulations and conditions of approval, specifically preventing "unnecessary or undue degradation". When applicable and practical, Plan and Notice review, inspections and associated compliance work will be coordinated with the Utah Division of Oil, Gas and Mining (DOGM). Coordination with Utah DOGM will help ensure adequate monitoring. Each Plan of Operation and Notice has or will have mitigation measures that cover the life of the operation. Field inspections will look for compliance with these measures and include monitoring weed control, reclamation of disturbed areas, revegetation and protection of the environment and public health and safety. Findings for each inspection will be documented and placed in the case file. Any non-compliance items will be noted and appropriate regulatory procedures followed. The number of explorations/operations monitored and the number in compliance will be reported in the Annual Program Summary and Planning Update. Monitoring of salable minerals will be done to ensure compliance with applicable laws, regulations, BLM policy contained in BLM Manual Section 3600 and Handbook H-3600- 1. Field inspections of common use areas, exclusive sale sites and other operations will be done on a periodic basis and will determine compliance with applicable laws, regulations, and the requirements of the approved mining plan. Inspections will specifically note compliance with reclamation, weed control and the protection of the environment and public health and safety. Operations in sensitive environmental areas or operations with a high potential for greater than usual impacts will be inspected more often. Identification and resolution of salable mineral trespasses will also be performed. The number of mineral material sites monitored and the number of these sites in compliance will be reported in the Annual Program Summary and Planning Update.

Resource	Suggested Monitoring and Methodology
Wild and Scenic Rivers	Conduct monitoring, including periodic patrols to check boundaries, signing, and visitor use to ensure that outstandingly remarkable values are not compromised on the suitable WSR segments. Inspect planned projects as well as on-the-ground projects for compliance to maintain WSR integrity. Monitor the upper and lower boundaries of each WSR at a minimum of once per year, document with photos at permanent locations at the on-stream boundaries. Every other year inspect random segments of the interior of each WSR for compliance to maintain WSR integrity.
Wilderness Study Areas	Wilderness Study Areas will be monitored in accordance with direction provided in the Interim Management Policy for Lands Under Wilderness Review (BLM Handbook H-8550-1), Chapter 2 section D. The policy requires monitoring of all WSAs at least once per month during the months the area is accessible by the public. Suitable monitoring methods will include both aerial and ground surveillance. As allowed by the IMP, alternative monitoring schedules may be prepared and implemented if approved by the State Director.
Other Designations	Following development of the comprehensive management plan for the National Historic Trail, the prepared Activity Trail Plan will include monitoring for the segments within the Price Field Office. Monitoring should include inspection of planned projects as well as on-the-ground projects for compliance to maintain remaining trail integrity. Assure that the VRM objectives for public lands seen along the trail are met. Monitor any interpretive signs installed along the Old Spanish National Historic Trail for wear or vandalism.